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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/941,371	08/28/2001	Mark Kintis	12-1201	6016
7590 08/09/2006		EXAMINER		
Katten Muchin Rosenman LLP			FILE, ERIN M	
525 West Monroe Street Chicago, IL 60661-3693			ART UNIT	PAPER NUMBER
_			2611	
			DATE MAILED: 08/09/2000	5

Please find below and/or attached an Office communication concerning this application or proceeding.

1) ⊠ Responsive to communication(s) filed on 13 June 2006. 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final. 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11, 453 O.G. 213. Disposition of Claims 4) ☒ Claim(s) 1-6.12-15 and 28-32 is/are pending in the application. 4a) Of the above claim(s)			Application No.	Applicant(s)				
Erin M. File The MAILING DATE of this communication appears on the cover sheet with the correspondence address Period for Reply A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION. A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION. If the period for reply is specified above, the readmine of the fire state of the period of the specified to be communication. Fasine state specified to be specified to be communication. Fasine state specified to be specified to be communication. Fasine state specified to be specified to be communication, seven if timely field, may reduce 3 my searned patent term adjustment. See 37 CFR 1.734(d) as the five reading date of this communication, when if timely field, may reduce 3 my searned patent term adjustment. See 37 CFR 1.734(d) as the five reading date of this communication, when if timely field, may reduce 3 my searned patent term adjustment. See 37 CFR 1.734(d) as a small patent term adjustment. See 37 CFR 1.734(d) as a closed in accordance with the practice under Ex parts Quayle, 1935 C.D. 11, 453 O.G. 213. Disposition of Claims 4 Claim(s) 1.6.12-15 and 28-32 is/are pending in the application. 4 Claim(s) 1.6.12-15 and 28-32 is/are pending in the application. 4 Claim(s) 1.6.12-16 and 28-32 is/are rejected. 7 Claim(s) 1.6.12-16 and 28-32 is/are rejected. 7 Claim(s) 1.6.12-16 and 28-32 is/are rejected. 9 The drawing(s) filed on 28 August 2001 is/are: a) accepted or b) objected to by the Examiner. Application Papers 9 The drawing(s) filed on 28 August 2001 is/are: a) accepted or b) objected to by the Examiner. 10 The drawing(s) filed on 28 August 2001 is/are: a) accepted or b) objected to by the Examiner. 11 The drawing(s) filed on 28 August 2001 is/are: a) accepted or b) objected to by the Examiner. 12 Ack	Office Action Summary		09/941,371	KINTIS, MARK	KINTIS, MARK			
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12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f). a) All b) Some * c) None of: 1. Certified copies of the priority documents have been received. 2. Certified copies of the priority documents have been received in Application No 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)). * See the attached detailed Office action for a list of the certified copies not received. Attachment(s) Notice of References Cited (PTO-892) Notice of Draftsperson's Patent Drawing Review (PTO-948) Notice of Draftsperson's Patent Drawing Review (PTO-152)	11)	The oath or declaration is objected to by the	ne Examiner. Note the attac	ched Office Action or form P	PTO-152.			
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DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-6, 12-15, 28-32 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

- 2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
 - (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
- Claims 1 and 28 are rejected under U.S.C. 103(a) as being unpatentable over Thorson (U.S. Patent No. 6,101,225) in view of Horiguchi et al (U.S. Patent No. 6,133,791) and Spruit et al. (U.S. Patent No. 6,549,495).

Claims 1, 28, Thorson discloses a first mixer stage (fig. 2) including a mixer (fig. 2, 122, col. 5, lines 32-34) with first (fig. 2, 133, col. 5, lines 33-34) and second (fig. 2, 221, col. 6, lines 34) input ports and a first output port (fig. 2, 117, col. 6, lines 35), a second mixer stage which including a second mixer (fig. 2, 120, col. 5, lines 25-26) with third

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(fig. 2, 131, col. 6, line 20) and forth (fig. 2, 219, col. 6, line 23) input ports and a second output port (fig. 2, 115, col. 5, line 29) with first input port (fig. 2, 133, col. 5, line 33) electrically coupled to third input port (fig. 2, 131, col. 6, line 20), a phase modulator (fig. 2, 242, col. 6, line 7) for phase modulating a first local oscillator signal (fig. 2, 113, col. 5, line 38) electrically coupled to first input port (fig. 2, 133), and an inverse phase modulator (fig. 2, 240) for inverse phase modulating a second local oscillator signal (fig. 2, 111) electrically coupled to third input port.

Thorson does not specifically disclose modulating according to a pseudorandom number (PN) code. Horiguchi teaches a pseudorandom number (PN) code generator (fig 14, 51) controlling a phase modulators (47) that outputs a mixer. The use of a PN code to synchronize BPSK modulators is well known in the art and would be obvious at the time of invention to incorporate PN code controller such as Horiguchi's into Thorson's mixing device (col. 4, lines 10-18).

Although neither Thorson nor Horiguchi discloses an inverse phase modulator which uses the same code as the modulator, Spruit discloses modulation and inverse modulation which use the same code. Further Spruit discloses this method has the advantage that the detection signal of the code track is stronger (col. 2, line 65 - col. 3, line 2). Because of this advantage, it would have been obvious to one skilled in the art at the time of invention to include the invention of Spruit into the combined invention of Thorson and Horiguchi.

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4. Claims 2-5, 12, 13, 14, 29, 30 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thorson (U.S. Patent No. 6,101,225) in view of Horiguchi et al (U.S. Patent No. 6,133,791) and Spruit et al. (U.S. Patent No. 6,549,495) as applied to claims 1 and 28 above, and further in view of Underbrink et al. (U.S. Patent No. 6,754,287).

Claim 2, Neither Thorson, nor Horiguchi, nor Spruit specifically disclose a phase shift keying (PSK) modulator. However, a BPSK modulation is a very general type of phase modulation in which digital information is modulated by changes in phase angle. In his apparatus for producing a modulated signal Underbrink discloses the use of PSK modulation in his digital modulation technique (col. 4, lines 5-10). Because of the prevalence of digital data in communications systems, and common use of phase shift keying in the art (col. 4, lines 9-10) it would have been obvious to one skilled in the art to use PSK modulator for a Phase Modulator at the time of invention.

Claims 3, 13, Neither Thorson, nor Horiguchi, nor Spruit disclose a binary phase shift keying modulator, however, BPSK is a common type of phase modulation. In his digital modulation technique Underbrink discloses the use of BPSK modulation as a type of PSK modulation in which two carrier phases are used (col 7, lines 45-63). BPSK modulation is commonly used because of its simplicity and high tolerance to noise. It would be obvious to one skilled in the art to use BPSK modulation and inverse modulation for a Phase Modulation and inverse Modulation at the time of invention.

Claim 4, Neither Thorson, nor Horiguchi, nor Spruit disclose a binary phase shift keying (BPSK) modulator modulated according to a pseudorandom number (PN) code.

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Horiguchi teaches a pseudorandom number (PN) code generator (fig 14, 51) controlling a phase modulators (47) that outputs a mixer. Underbrink further discloses the generation of a BPSK signal for modulation purposes (col. 7, lines 62-65). The PN code has the advantage of providing synchronization to modulators, such as BPSK modulators, and would therefore have been obvious at the time of invention to incorporate PN code controller such as Horiguchi's into Thorson's mixing device. Claim 5, Neither Thorson, nor Horiguchi, nor Spruit disclose a binary phase shift keying inverse modulator, However, BPSK is a common type of phase modulation. In his digital modulation technique Underbrink discloses the use of BPSK modulation as a type of PSK modulation in which two carrier phases are used (col 7, lines 45-63). BPSK modulation is commonly used because of its simplicity and high tolerance to noise. It would be obvious to one skilled in the art to use BPSK modulation and inverse modulation for a Phase Modulation and inverse Modulation at the time of invention. Claims 12, 30, Neither Thorson, nor Horiguchi, nor Spruit disclose a quaternary phase shift keying (QPSK) modulator. A QPSK modulator is a common type of PSK modulator. In his digital modulation technique Underbrink discloses the use of QPSK modulation as a type of PSK modulation in which four carrier phases are used (col 7, lines 65-68).

Claims 14, 32, Neither Thorson, nor Horiguchi, nor Spruit specifically disclose an M-ary modulator and inverse M-ary modulator. In his digital modulation technique Underbrink discloses the use of M-ary, or MPSK modulation as a type of PSK modulation in which multiple carrier phases are used (col 8, lines 1-4). M-ary, or multiple phase modulation,

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is advantageous because it produces improved error performance. It would be obvious

to one skilled in the art to use an M-ary modulator and inverse M-ary modulator for a

Phase Modulator and inverse Phase Modulator at the time of invention.

Claim 29, Neither Thorson, nor Horiguchi, nor Spruit disclose a binary phase shift

keying (BPSK) modulator and inverse modulator. However, BPSK is a common type of

phase modulation. In his digital modulation technique Underbrink discloses the use of

BPSK modulation as a type of PSK modulation in which two carrier phases are used

(col 7, lines 45-63). BPSK modulation is commonly used because of its simplicity and

high tolerance to noise. It would be obvious to one skilled in the art to use BPSK

modulation and inverse modulation for a Phase Modulation and inverse Modulation at

the time of invention.

5. Claims 15 and 31 are rejected under U.S.C. 103(a) as being unpatentable over

Thorson (U.S. Patent No. 6,101,225) in view of Horiguchi et al (U.S. Patent No.

6,133,791) and Spruit et al. (U.S. Patent No. 6,549,495) and in further view of Scott

(U.S. Patent No. 5,784,403).

Claims 15, 31, Neither Thorson, nor Horiguchi, nor Spruit disclose a GMSK modulator

and inverse modulator. However in his modulation device Scott teaches a phase

modulator with an alternate embodiment that includes the use of GMSK modulation

instead of PSK modulation (col 18, line 60). Because GMSK is a type of phase

modulation and has the benefit of reducing the bandwidth required to modulate signals

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if would be obvious to one skilled in the art to use the GMSK modulator and inverse modulator in Thorson's apparatus at the time of invention.

- 6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thorson (U.S. Patent No. 6,101,225) in view of Horiguchi et al (U.S. Patent No. 6,133,791) and Spruit et al. (U.S. Patent No. 6,549,495) as applied to claim 1 above, and further in view of Koslov et al. (U.S. Patent No.).
- Claim 6, Neither Thorson, nor Horiguchi, nor Spruit disclose a configuration in which an intermediate filter coupled between the first mixer's output port and one of the second mixer's input ports. However, Koslov teaches a first mixer (fig 16, 602, col. 11, lines 1-4) controlled by a local oscillator (fig. 16, 608, col. 11, lines 8-11) connected to an filter (fig. 16, 604, col. 11, lines 1-4) coupled to a second mixer (fig. 16, 606, col. 11, lines 45-49) controlled by a local oscillator (fig. 16, 610, col. 11, lines 15-17). The use of a filter between the mixing units is advantageous because they reduce leakage that can occur from local oscillator inputs. Because of this it would be obvious to one skilled in the art at the time of invention to incorporate this means into Thorson's apparatus.
- 7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erin M. File whose telephone number is (571)272-6040. The examiner can normally be reached on M-F 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Erin M. File

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8/3/2006